

CLAIMS

What is claimed is:

1. A method for combining multiple MPEG-encoded video streams,
comprising:
5 determining a value for a display position code corresponding to a display
position of each slice of each of the MPEG-encoded video streams;
modifying the value of the display position code of each slice of each of the
MPEG-encoded video streams as necessary; and
interleaving each slice of each of the MPEG-encoded video streams as
10 modified into a single composite video stream.

2. The method for combining multiple MPEG-encoded video streams claim 1,
wherein said display position code is at least one of a macroblock address increment
variable length codeword and at least a byte of a slice startcode.

3. The method for combining multiple MPEG-encoded video streams claim 1,
wherein said the MPEG-encoded video streams are one of MPEG-1 encoded video
streams and MPEG-2 encoded video streams.

4. The method for combining multiple MPEG-encoded video streams of claim 1, wherein said display position code includes a macroblock address increment variable length codeword, said macroblock address increment variable length codeword of each slice of each of the MPEG-encoded video streams contains 3 bits having a corresponding increment value of one of 2 and 3.

5. The method for combining multiple MPEG-encoded video streams of claim 4, wherein said modifying includes modifying the value of the macroblock address increment variable length codeword of each slice of each of the MPEG-encoded video streams to be modified to an increment value of between 22 and 33 inclusive.

6. The method for combining multiple MPEG-encoded video streams of claim 5, wherein said modifying includes modifying the 3 bits of said macroblock address increment variable length codeword as necessary and adding a byte to result in an 11-bit modified macroblock address increment variable length codeword.

7. The method for combining multiple MPEG-encoded video streams of claim 1, wherein said display position code includes a macroblock address increment variable length codeword having a first number of bits and wherein said modifying the display position code of each slice of each of the MPEG-encoded video streams to be modified results in a modified macroblock address increment variable length codeword having a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

8. The method for combining multiple MPEG-encoded video streams of claim 1, wherein said interleaving each slice of each of the MPEG-encoded video streams as modified into a single composite video stream is according to the display position code as modified of each slice of each MPEG-encoded video stream.

9. The method for combining multiple MPEG-encoded video streams of claim 1, wherein said MPEG-encoded video streams are MPEG-1 encoded video streams, and wherein said display position code includes a macroblock address increment (MBAI) codeword, wherein said modifying the display position code of each slice of each of the MPEG-1 encoded video streams as necessary includes selectively adding a number of MBAI_stuffing codes, said number of MBAI_stuffing codes ranging from 0 to 7.

10. The method for combining multiple MPEG-encoded video streams of claim 9, wherein said number of MBAI_stuffing codes is determined such that the macroblock address increment codeword maintains bit-alignment of the display position code within a byte.

11. The method for combining multiple MPEG-encoded video streams of claim 9, wherein said macroblock address increment codeword has a first number of bits and wherein said modifying the display position code of each slice of each of the MPEG-encoded video streams to be modified results in a modified macroblock address increment codeword and a predetermined number of MBAI_stuffing codes, the modified macroblock address increment codeword and the predetermined number of MBAI_stuffing codes combine to having a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

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AV 12. A system for combining multiple MPEG-encoded video streams, comprising:
an interactive decoder adapted to determine a display position code for a display position of each slice of each of the MPEG-encoded video streams and to modify the display position code of each slice of each of the MPEG-encoded video streams as
15 necessary, said interactive decoder further adapted to interleave each slice of each of the MPEG-encoded video streams as modified into a single composite video stream.

13. The system for combining multiple MPEG-encoded video streams of claim 12, further comprising a broadcast center for broadcasting the multiple MPEG-encoded
20 video streams to said interactive decoder.

14. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said interactive decoder is further adapted to modify the value of the display position code to maintain bit-alignment of the display position code within a byte.

5 15. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said display position code is at least one of a macroblock address increment variable length codeword and at least a byte of a slice startcode.

10 16. The system for combining multiple MPEG-encoded video streams of claim 12, wherein the MPEG-encoded video streams are one of MPEG-1 encoded video streams and MPEG-2 encoded video streams.

15 17. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said display position code includes a macroblock address increment variable length codeword, said macroblock address increment variable length codeword of each slice of each of the MPEG-encoded video streams contains 3 bits having a corresponding increment value of one of 2 and 3.

20 18. The system for combining multiple MPEG-encoded video streams of claim 17, wherein said interactive decoder is further adapted to modify the value of the macroblock address increment variable length codeword of each slice of each of the MPEG-encoded video streams to be modified to have a corresponding increment value of between 22 and 33 inclusive.

19. The system for combining multiple MPEG-encoded video streams of claim 18, wherein said interactive decoder is further adapted to modify the 3 bits of said macroblock address increment variable length codeword as necessary and add a byte to result in an 11-bit modified macroblock address increment variable length codeword.

20. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said display position code includes a macroblock address increment variable length codeword having a first number of bits and wherein said interactive decoder is further adapted to modify the display position code of each slice of each of the MPEG-encoded video streams to be modified to result in a modified macroblock address increment variable length codeword having a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

21. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said interactive decoder is further adapted to interleave each slice of each of the MPEG-encoded video streams as modified into a single composite video stream in accordance with the display position code, as modified, of each slice of each MPEG-encoded video stream.

22. The system for combining multiple MPEG-encoded video streams of claim 12, wherein said MPEG-encoded video streams are MPEG-1 encoded video streams, and wherein said display position code includes a macroblock address increment (MBAI) codeword, wherein said interactive decoder is adapted to modify the display position code of each slice of each of the MPEG-1 encoded video streams as necessary by selectively adding a number of MBAI_stuffing codes, said number ranging from 0 to 7.

23. The system for combining multiple MPEG-encoded video streams of claim 22, wherein said interactive decoder is adapted to determine said number of MBAI_stuffing codes such that the macroblock address increment codeword maintains bit-alignment of the display position code within a byte.

24. The system for combining multiple MPEG-encoded video streams of claim 22, wherein said macroblock address increment codeword has a first number of bits and wherein said interactive decoder is adapted to modify the display position code of each slice of each of the MPEG-encoded video streams to be modified to result in a modified macroblock address increment codeword and a predetermined number of MBAI_stuffing codes, the modified macroblock address increment codeword and the predetermined number of MBAI_stuffing codes combine to have a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

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A3 25. An interactive decoder for combining multiple MPEG-encoded video streams, comprising:

means for determining a value for a display position code corresponding to a display position of each slice of each of the MPEG-encoded video streams;

5 means for modifying the value of the display position code of each slice of each of the MPEG-encoded video streams as necessary; and

means for interleaving each slice of each of the MPEG-encoded video streams as modified into a single composite video stream.

10 26. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said modifying means comprises means for modifying the value of the display position code to maintain bit-alignment of the display position code within a byte.

15 27. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said display position code is at least one of a macroblock address increment variable length codeword and at least a byte of a slice startcode.

20 28. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said the MPEG-encoded video streams are one of MPEG-1 encoded video streams and MPEG-2 encoded video streams.

29. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said display position code includes a macroblock address increment variable length codeword having 3 bits with a corresponding increment value selected from the group consisting of 2 and 3.

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30. The interactive decoder for combining multiple MPEG-encoded video streams of claim 29, wherein said modifying means includes means for modifying the value of the macroblock address increment variable length codeword of each slice of each of the MPEG-encoded video streams to be modified to have a corresponding increment value of between 22 and 33 inclusive.

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31. The interactive decoder for combining multiple MPEG-encoded video streams of claim 30, wherein said modifying means includes means for modifying the 3 bits of said macroblock address increment variable length codeword as necessary and adding a byte to result in an 11-bit modified macroblock address increment variable length codeword.

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32. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said display position code includes a macroblock address increment variable length codeword having a first number of bits and wherein said means for modifying the display position code of each slice of each of the MPEG-encoded video streams to be modified generates a modified macroblock address increment variable length codeword having a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

33. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said interleaving means interleaves each slice of each of the MPEG-encoded video streams as modified into a single composite video stream according to the display position code as modified of each slice of each MPEG-encoded video stream.

34. The interactive decoder for combining multiple MPEG-encoded video streams of claim 25, wherein said MPEG-encoded video streams are MPEG-1 encoded video streams, wherein said display position code includes a macroblock address increment (MBAI) codeword, and wherein said modifying means modifies the display position code of each slice of each of the MPEG-1 encoded video streams as necessary including selectively adding a number of MBAI_stuffing codes, said number ranging from 0 to 7.

35. The interactive decoder for combining multiple MPEG-encoded video streams of claim 34, wherein said modifying means determines the number of MBAI_stuffing codes such that the macroblock address increment codeword maintains bit-alignment of the display position code within a byte.

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36. The interactive decoder for combining multiple MPEG-encoded video streams of claim 34, wherein said macroblock address increment codeword has a first number of bits and wherein said modifying means modifies the display position code of each slice of each of the MPEG-encoded video streams to be modified to result in a modified macroblock address increment codeword and a predetermined number of MBAI_stuffing codes, the modified macroblock address increment codeword and the predetermined number of MBAI_stuffing codes combine to have a modified number of bits, said modified number of bits modulo 8 is equal to said first number of bits modulo 8.

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